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Poster Communication Abstract – 2.38

RECOVERY, MORPHOLOGICAL, MOLECULAR, AND NUTRITIONAL CHARACTERIZATION OF THE GLOBE ARTICHOKE "CARCIOFO ORTANO", A LANDRACE WITH A HIGH RISK OF GENETIC EROSION CULTIVATED IN CENTRAL ITALY

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Cynara cardunculus L. var. scolymus, genetic diversity, molecular markers, morphological traits, nutritional values

Globe artichoke [*Cynara cardunculus* L. var. *scolymus* (L.) Fiori] is an herbaceous perennial species native to Mediterranean basin cultivated mainly for its immature edible flower heads. Italy is the leading producer worldwide and has the largest biodiversity of globe artichoke, which has resulted in the cultivation of several landraces well adapted to the local climatic conditions. Despite this considerable biodiversity, Italian autochthonous germplasm is a risk of genetic erosion because of the large cultivation of few varietal types best fitting the market demand and the recent introduction of new seed propagated cultivars. The present study focused on the molecular, morphological, and nutritional characterization of a globe artichoke landrace at risk of genetic erosion still cultivated in non-specialized smallholdings in the municipality of Orte (Lazio Region) and therefore named "Carciofo Ortano". Molecular analysis based on SSR and ISSR markers was carried out on 73 genotypes selected at random from 20 smallholdings and family gardens located in the Orte countryside and 17 accessions of landraces/clones belonging to the main varietal types cultivated in Italy. The results confirmed the belonging of "Carciofo Ortano" to the "Romanesco" varietal typology and revealed the presence within the landrace of two distinct genetic populations named Orte 1 and Orte 2. Despite the high level of within population genetic variation

detected, the two populations were genetically differentiated each to other and from the landraces/clones of the main varietal types cultivated in Italy. Based on molecular analyses, we identified the representative genotypes of the genetic variability found in the landrace to be reproduced in situ by setting up a field gene bank with two main objectives: the conservation of the genetic diversity of the landrace and the assessment of its morphological and nutritional characterization by using material grown in the same experimental field. The morphological and nutritional characterization was performed on representative genotypes for each of two populations of the “Carciofo Ortano” and four landraces/clones included in the varietal platform of the PGI “CARCIOFO ROMANESCO DEL LAZIO” used as reference genotypes (“Campagnano”, “Castellammare”, “C3” and “Grato 1”). Significant differences among genotypes were found for many of the qualitative and quantitative morphological traits. Principal component analysis showed that, of the 43 morphological descriptors considered, 12, including plant height, head shape index, head yield, and earliness, allowed a clear grouping of genotypes, distinguishing Orte 1 and Orte 2 populations from the reference genotypes. Regarding the nutritional and chemical composition of heads, particular attention should be devoted to the genotypes belonging to the Orte 2 population for their high content in dietary fiber, inulin, flavonoids and phenols, a feature that could be highly appreciated by the market.